FlyBy Math™ Alignment
Indiana's Academic Standards - Mathematics

Standard 3. Algebra and Functions

Students express quantitative relationships using algebraic terminology, expressions, equations, inequalities, and graphs.

Indicator	***FlyBy Math™* Activities**
7.3.6 Define slope as vertical change per unit of horizontal change and recognize that a straight line has constant slope or rate of change.	--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system. --Interpret the slope of a line in the context of a distance-rate-time problem.
7.3.7 Find the slope of a line from its graph.	--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes. --Interpret the slope of a line in the context of a distance-rate-time problem.
7.3.10 Identify and describe situations with constant or varying rates of change and know that a constant rate of change describes a linear function.	--Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates. --Interpret the slope of a line in the context of a distance-rate-time problem.

Standard 5. Measurement

Students compare units of measure and use similarity to solve problems. They compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less regular objects.

Indicator	***FlyBy Math™* Activities**
7.5.3 Read and create drawings made to scale, construct scale models, and solve problems related to scale.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Conduct simulation and measurement for several aircraft conflict problems. --Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes.

Standard 6. Data Analysis and Probability

Students collect, organize, and represent data sets and identify relationships among variables within a data set. They determine probabilities and use them to make predictions about events.

Indicator	***FlyBy Math™* Activities**
7.6.1 Analyze, interpret, and display data in appropriate bar, line, and circle graphs and stem-and-leaf plots* and justify the choice of display.	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.

Standard 7. Problem Solving

Students make decisions about how to approach problems and communicate their ideas.

Indicator	***FlyBy Math™* Activities**
7.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.	--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.
7.7.2 Make and justify mathematical conjectures based on a general description of a mathematical question or problem.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system. --Predict outcomes and explain results of mathematical models and experiments.

Students use strategies, skills, and concepts in finding and communicating solutions to problems.

Indicator	***FlyBy Math™* Activities**
7.7.4 Apply strategies and results from simpler problems to solve more complex problems.	--Compare airspace scenarios for both the same and different starting conditions and the same and different rates.
7.7.5 Make and test conjectures by using inductive reasoning.	--Predict outcomes and explain results of mathematical models and experiments. --Compare predictions, calculation, and experimental evidence for several aircraft conflict problems.
7.7.6 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system. --Predict outcomes and explain results of mathematical models and experiments.
7.7.9 Use graphing to estimate solutions and check the estimates with analytic approaches.	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Compare predictions, calculation, and experimental evidence for several aircraft conflict problems.

7.7.10 Make precise calculations and check the validity of the results in the context of the problem.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation. --Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.
Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.	
Indicator 7.7.11 Decide whether a solution is reasonable in the context of the original situation.	***FlyBy Math™*** **Activities** --Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation. --Predict outcomes and explain results of mathematical models and experiments.
7.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system. --Use tables, graphs, and equations to solve aircraft conflict problems.